

Space Debris: Seeing sub-mm to cm particles at meter to Mm-scale range with a novel, non-contact, technology

Innovation

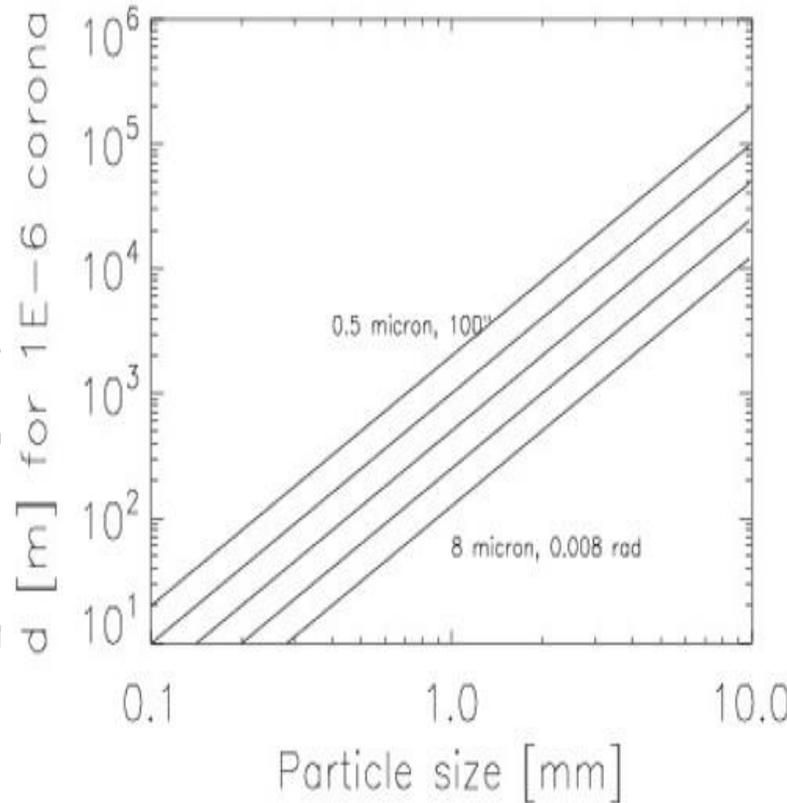
- HyDOS: A sensitive space debris (SD) remote sensing technology
- Instrument based on novel thin, low-mass, low-scattered light mirrors
- low mass 8U-scale off-axis IR optical system

Mission

- Microsat-scale platform
- 700 km Sun synchronous, dawn/dusk orbit
- 6 month mission
- 10^{12} B (1TB-scale) dataset

Impact

- Measures an unexplored space debris regime: mm and sub-mm particle size
- Sensitive from sub-mm to cubesat-size space objects at sub-km to 10^5 km range
- Immune to SD surface scattering properties
- Can measure velocity, size and range of SD

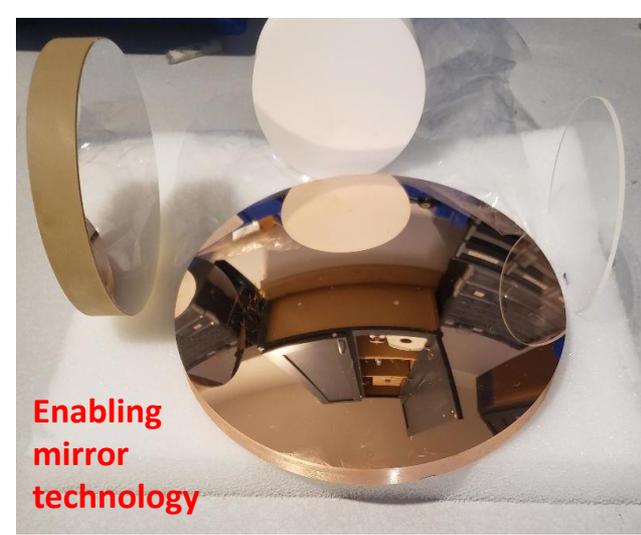


Approach

- Rigorous simulation of detection volume vs aperture, camera cadence, velocity, SD range and particle size distribution
- Optomechanical preliminary design
- Mission orbit, mass, and power design



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